AMENDMENTS TO THE CLAIMS

Below is a complete listing of the revised claims with a status identifier in parenthesis for each claim.

LISTING OF CLAIMS

1. (Currently Amended) In a system for supplying electrical energy to a load from a direct electrical energy converter, an arrangement for optimizing converter power generation efficiency comprising:

an impedance transformation circuit coupled between the energy converter and load including a power switch operative in a first state to conduct current from the energy converter to the load and operative in a second state to inhibit energy converter current from reaching the load; ~~and~~

an energy converter output current sensor coupled to the energy converter;

an energy converter output voltage sensor coupled to the energy converter;

a load current sensor coupled to the load;

a load voltage sensor coupled to the load; and

a controller coupled to each of the sensors and the power switch, the controller operative to place the power switch in its first and second states in accordance with a desired duty cycle based on a signal from each of the sensors so as to maximize power delivered to the load, and wherein a polarity of the energy converter current delivered to the load is dependent on a product of energy efficiency of the energy converter and power transfer efficiency from the energy converter.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Original) The arrangement of claim 1 further comprising:

a load voltage regulator coupled between an output of the impedance transformation circuit and the load.

6. (Original) The arrangement of claim 5 wherein the load voltage regulator comprises a DC/DC converter.

7. (Original) The arrangement of claim 5 further comprising:

a load balancing energy storage device coupled across the output of the impedance transformation circuit and an input of the load voltage regulator.

8. (Original) The arrangement of claim 7 wherein the load balancing energy storage device comprises a battery.

9. (Original) The arrangement of claim 7 wherein the load balancing energy storage device comprises an ultra-capacitor.

10. (Original) The arrangement of claim 1 wherein the energy converter is selected from the group consisting of: fuel cell, thermoelectric or thermoionic device, electrochemical battery, solar cell or photovoltaic converter, thermophotovoltaic system,

plasma power generator, ferroelectric device, piezoelectric device, electrohydrodynamic generator.

11. (Currently Amended) A method of optimizing power generation efficiency of a direct electrical energy converter applying electrical current to a load, the method comprising:

monitoring output current and output voltage of the direct electrical energy converter;

monitoring current through and voltage across the load;

placing an impedance transformation circuit between the direct electrical energy converter and the load; and

~~adjusting impedance of the impedance transformation circuit by~~ altering a duty cycle of ~~a power switch~~the impedance transformation circuit so as to allow the impedance transformation circuit to operate~~ive~~ in a first state to deliver the energy converter current to the load and operate~~ing~~ in a second state to inhibit energy converter current from reaching the load so as to maximize power delivered to the load, and wherein a polarity of the energy converter current delivered to the load is dependent on a product of energy efficiency of the energy converter and power transfer efficiency from the energy converter.

12. (Cancelled)

13. (Cancelled)

14. (Original) The method of claim 13 wherein the polarity of the predetermined amount is reversed whenever the product has not changed.

15. (Original) The method of claim 13 wherein the polarity of the predetermined amount is reversed whenever the product changes positively and a present polarity of the predetermined amount is positive.

16. (Original) The method of claim 13 wherein the polarity of the predetermined amount is reversed whenever the product changes negatively and a present polarity of the predetermined amount is negative.

17. (Original) The method of claim 13 wherein the polarity of the predetermined amount is unchanged whenever the product changes in a direction opposite to the present polarity of the predetermined amount.